



FIG. 1

The diagram illustrates a complex chemical process for the extraction of zirconium and hafnium from a TA/NB residue. The process begins with the input of TA/NB residue (1) and H₂SO₄ solution (2) into a sulfator (40). The sulfator produces solid residue (2) and acid leach liquor (3). The acid leach liquor (3) is then loaded (50A) into a column. The leach filtrate without Zr, U (8) is then passed through a series of columns (54A, 58A, 60A, 62A, 64A, 66A, 68A, 70A, 72A, 74A, 76A, 78A, 79A, 80A, 81A, 82A, 83A, 84A, 85A, 86A, 87A, 88A, 89A, 90A, 91A, 92A, 93A, 94A, 95A, 96A, 97A, 98A, 99A, 100A) to produce the final products: HF product (5), leach residue (6), and leach filtrate without Zr, U (8). The process also involves a water leach (46) and a condenser (44). The leach filtrate without Zr, U (8) is then passed through a series of columns (54A, 58A, 60A, 62A, 64A, 66A, 68A, 70A, 72A, 74A, 76A, 78A, 79A, 80A, 81A, 82A, 83A, 84A, 85A, 86A, 87A, 88A, 89A, 90A, 91A, 92A, 93A, 94A, 95A, 96A, 97A, 98A, 99A, 100A) to produce the final products: HF product (5), leach residue (6), and leach filtrate without Zr, U (8).

FIG. 2